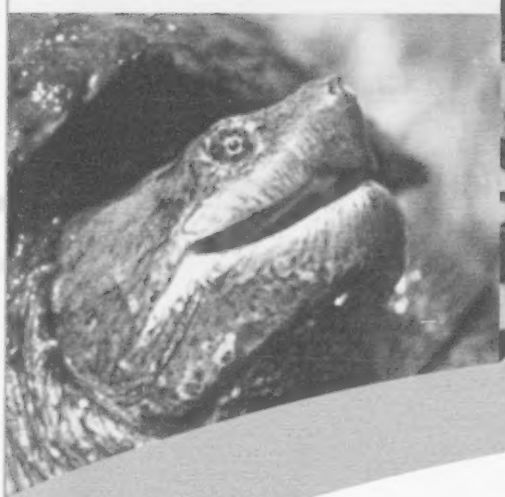
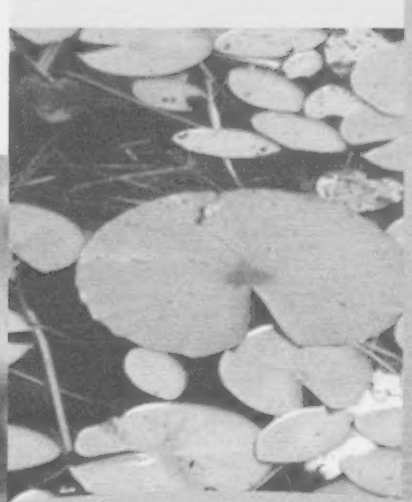
Environment Canada Environnement Canada

Great Lakes Wetlands Conservation Action Plan

HIGHLIGHTS REPORT

2003 TO 2005





Ontario

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Ducks Unlimited Canada

Ontario Nature

Canada

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Walter B. Fechner

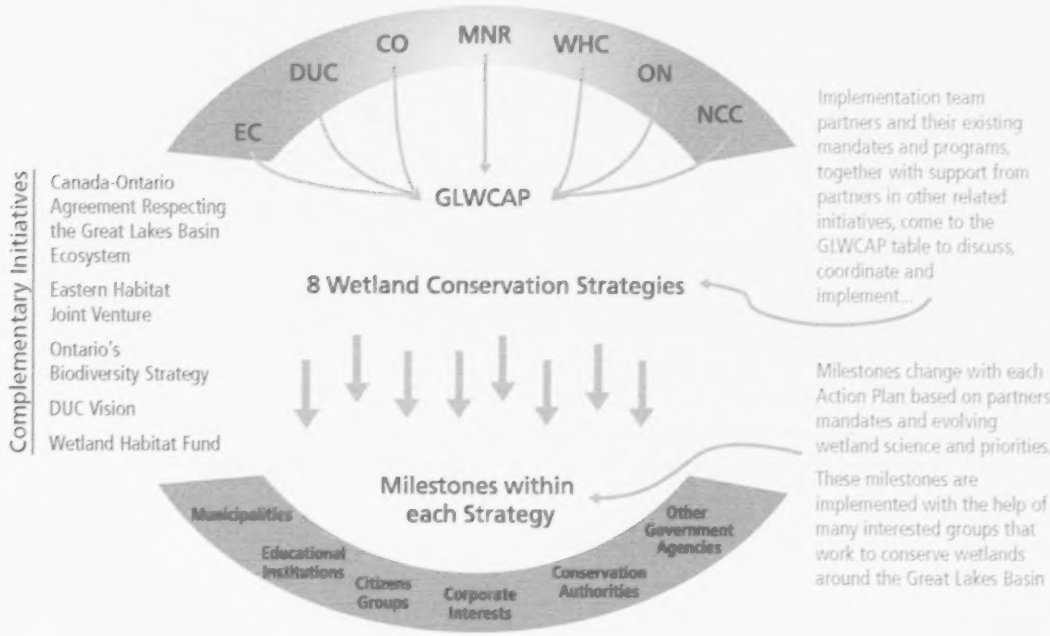
WETLAND CONSERVATION IN THE GREAT LAKES BASIN

When the Great Lakes Wetlands Conservation Action Plan (GLWCAP or the "Action Plan") first came into effect twelve years ago, it facilitated a new way of doing business—where partnerships and accountability became the key. Under the GLWCAP, both government and non-government organizations alike had a forum to share resources, prioritize needs, and pursue opportunities to cooperatively conserve the remaining wetlands in the Great Lakes Basin.

Organized into eight strategies consisting of a series of milestones, or actions, the GLWCAP aims to encompass all aspects of wetland conservation. The Action Plan is delivered by a variety of agencies, organizations and individuals interested in wetland protection and implemented by a team of representatives from Environment Canada (EC), the Ontario Ministry of Natural Resources (MNR), Ducks Unlimited Canada (DUC), Ontario Nature (ON), Conservation Ontario (CO), Wildlife Habitat Canada (WHC), and the Nature Conservancy of Canada (NCC). Other major partners include the Ontario Eastern Habitat Joint Venture of the North American Waterfowl Management Plan and the Government of Canada's Great Lakes Sustainability Fund (GLSF). The implementation team facilitates, monitors, assesses and reports on progress under the Action Plan.

The first Action Plan wrapped up successfully in 2000 and the second Action Plan began. Conservation milestones were adapted to address changes in policy and scientific understanding and modified for continued progress under each GLWCAP strategy. The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) was renewed in 2002, specifying five-year goals for the Great Lakes Basin ecosystem. Included in its Lakewide Management Annex is a commitment to "implement the Great Lakes Wetlands Conservation Action Plan."

Continuing its successful tradition of public accountability in reporting, GLWCAP partners evaluate the progress of each conservation milestone comprising the Action Plan's second phase. As we enter into the last year of COA commitments, this evaluation recognizes areas of accomplishment and identifies milestones where further work is required. The fourth in a series of progress reports on the Action Plan, this document focuses on the advancements made under each of the eight GLWCAP strategies between January 2003 and December 2005 since the *GLWCAP Highlights Report (2000–2003)*, and evaluates the milestones in continuum to Phase Two.


CO
MNR
WHC
DUC
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EC
NCC
GLWCAP
Implementation team partners and their existing mandates and programs, together with support from partners in other related initiatives, come to the GLWCAP table to discuss, coordinate and implement...
Complementary Initiatives
Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem
Eastern Habitat Joint Venture
Ontario's Biodiversity Strategy
DUC Vision
Wetland Habitat Fund
8 Wetland Conservation Strategies
Milestones change with each Action Plan based on partners' mandates and evolving wetland science and priorities.
Milestones within each Strategy
These milestones are implemented with the help of many interested groups that work to conserve wetlands around the Great Lakes Basin
Municipalities
Educational Institutions
Citizens Groups
Corporate Interests
Conservation Authorities
Other Government Agencies

Partnership for Protection: The Canada-Ontario Agreement

The governments of Canada and Ontario have been partners for more than 30 years in the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA).

The COA helps Canada meet its obligations under the Great Lakes Water Quality Agreement, signed by Canada and the United States in 1972 and amended in 1987. The COA also directs how the two governments will work together to improve the health of our Great Lakes and address specific problems, such as the spread of aquatic invasive species.

Under the current five-year COA (2002–2007), Canada and Ontario have invested over $100 million to clean up and restore the Great Lakes for future generations. Hundreds of partners have also matched and levered these funds by investing in hundreds of projects, including projects to restore fish and wildlife populations and their habitat, evaluate and conserve coastal wetlands, protect species at risk, monitor fish populations, control aquatic invasive species, and conduct research and monitoring on Great Lakes aquatic ecosystems.

Why Focus On Great Lakes Wetlands?

Wetlands are important natural features that are critical to the ecological, economic and societal health of the Great Lakes Basin. They are dynamic systems that ebb and swell under changes in water level regimes. They have capacity for flood attenuation during heavy rains and spring thaw, and are also just as important during drought when many plant species emerge from persistent seed banks and provide important habitat. This functional adaptability is of growing importance with climate variability and the possible effects of climate change.

Wetlands are natural filters—improving the quality of water we drink and, in turn, our health. They help protect shoreline areas from storm damage and erosion, maintain water quantity by storing water and recharging groundwater supplies, and provide many opportunities for recreation. They are also significant reservoirs of biodiversity. Southern Ontario is home to one-third of Canada's species at risk, many of which find their habitat in Great Lakes wetlands.

The connection between wetlands and human health is becoming better recognized by society, but the fact is that Great Lakes wetlands continue to deteriorate, particularly in the lower Great Lakes Basin. Two-thirds of the wetlands in southern Ontario are estimated to have been lost, and many that remain are under threat. Wetland stressors include the hardening of shorelines to protect property boundaries from erosion, wetland draining or filling, contaminated runoff, artificial changes in water levels and the spread of exotic and invasive species. For these reasons and more, GLWCAP partners are committed to coastal wetland conservation in order to ensure these habitats and their important ecological services are protected for future generations.

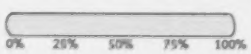
MEASURING UP:

AN EVALUATION OF PROGRESS TOWARDS MILESTONES

The GLWCAP outlines specific steps or milestones to support improvements in the physical protection and rehabilitation of wetlands: a better informed public, increased knowledge and understanding, improved policy and planning, and increased cooperation among groups interested in wetlands.

A key component of the GLWCAP is accountability. The following pages include an internal evaluation of progress towards milestones as well as stories that highlight selected wetland activities, organized by GLWCAP strategy. The relative progress under each milestone has been evaluated by the GLWCAP implementation team, reflecting the total progress towards meeting established goals. This is the first assessment of the GLWCAP, Phase Two. Two previous evaluations have been published as part of Phase One, the last occurring in the *GLWCAP Highlights Report (1997-2000)*. Visit www.on.ec.gc.ca/wildlife/publications-e.html for a copy.

COMPLETED: A milestone that has been reached; no further work is required.



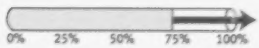
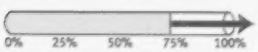
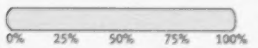
IN PROGRESS: A milestone for which work has begun. The amount of solid area in the bar indicates a relative measure of progress towards reaching a finite milestone. These targets or end-points may be revised from time to time, under consultation with GLWCAP partners.

ONGOING: A milestone for which the target goal is not finite. The work under this milestone is an ongoing priority. The amount of solid area in the bar indicates a relative measure of the progress in this milestone for the second phase of the GLWCAP.

STRATEGY 1

Increase Public Awareness and Commitment to Protecting Wetlands

Publicize information concerning wetland values, protection, rehabilitation, policies and regulations and encourage involvement by individuals, groups, corporations and industries in all aspects of Great Lakes wetlands protection and rehabilitation.

PROGRESS	MILESTONE
	1.1 Publicize wetland values to society, to water, and to wildlife in order to encourage wetlands conservation. This may involve developing, publishing and distributing brochures, educational packages and status reports. Possible distribution vehicles include MNR district offices, conservation authority publications, and newsletters of non-governmental organizations.
	1.2 Produce and distribute communication packages targeted to corporations, agriculture (including individual landowners), industry and development interests, school curriculum, and municipal and regional governments. Include information on opportunities for involvement in wetlands conservation.
	1.3 Expand distribution network through Web-based information and links (e.g., improve and maintain current GLWCAP Web site).
	1.4 Provide a publicly accessible, Web-based basic wetland attribute and mapping resource (e.g., provide Ontario Coastal Wetlands Atlas on-line – static maps). Linked to 2.2.

How?

PUBLIC AWARENESS OF THE IMPORTANCE OF WETLANDS AS WELL AS CITIZENS' ACTIONS TO BENEFIT WETLANDS, HAVE INCREASED THROUGH A VARIETY OF OUTREACH MATERIALS AND ACTIVITIES.

Copies of the following documents are available from each of the respective organizations (see Contacts)

Spreading the Word about Wetlands

++ Selections are available on-line.
Bold selections are described in the following stories.

2005

- *Wetlands on my Lands*, 2005. Ducks Unlimited Canada, 28pp.
- *Protecting What Sustains Us: Ontario's Biodiversity Strategy*, 2005. MNR, 44pp.++
- *The Connection: News from the Ontario Ministry of Natural Resources about the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem*, 2005. MNR++
- *Our Sustainable Future: Ministry of Natural Resources Strategic Directions*, 2005. MNR++
- *Science for Our Sustainable Future: A Science Strategy for the Ontario Ministry of Natural Resources*, 2005. MNR
- *Great Lakes Conservation Blueprint for Terrestrial Biodiversity, Volumes I and 2*, 2005. NCC, NHIC, MNR++
- *Great Lakes Conservation Blueprint for Aquatic Biodiversity, Volumes I and 2*, 2005. NCC, NHIC, MNR++
- *Ontario Ecogifts Handbook 2005*. Environment Canada, 28pp.++
- Hudson's Bay and James Bay Wetlands Poster, 2005. Environment Canada
- *West Ottawa Wetlands* Newsletter, 2005. Wetland Habitat Fund, Wildlife Habitat Canada
- *Headwater Wetlands of the Oak Ridges Moraine* Brochure, 2005. Wetland Habitat Fund, Wildlife Habitat Canada

2004

- *The Value of Natural Capital in Settled Areas of Canada*, 2004. Nature Conservancy of Canada and Ducks Unlimited Canada, 36pp.++
- *How Much Habitat is Enough? A Framework for Guiding Habitat Rehabilitation in Great Lakes Areas of Concern (2nd edition)*, 2004. Environment Canada, 88pp.++
- *Marsh Havens: Improving Marsh Habitats for Birds in the Great Lakes Basin*, 2004. Bird Studies Canada, Environment Canada, Wildlife Habitat Canada, 16pp.++
- *Wetlands: Wet, Wild and Essential* Poster, 2004. Environment Canada++
- *Species at Risk in Ontario* Poster, 2004. Environment Canada++
- *The Species at Risk Act in Ontario* Fact Sheet, 2004. Environment Canada++
- *A Wetland Conservation Plan*, 2004. Wetland Habitat Fund, Wildlife Habitat Canada, 31pp.
- *Alfred Birding Trail: Connecting Waterfowl and People* Brochure, 2004. Wetland Habitat Fund, Wildlife Habitat Canada++
- *North American Waterfowl Management Plan: 2004 Implementation Framework, Canada, U.S., Mexico*++
- *North American Waterfowl Management Plan: 2004 Strategic Guidance, Canada, United States, Mexico*++

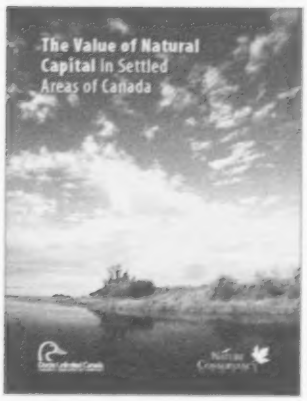
2003

- *The Ontario Great Lakes Coastal Wetland Atlas: A Summary of Information (1983–1997)*, 2003. Environment Canada and the Ontario Ministry of Natural Resources, 57pp.++
- *Ontario Shorebird Conservation Plan*, 2003. Environment Canada. 52pp.++
- *Conservation Easements as Ecological Gifts* Fact Sheet, 2003. Environment Canada.++
- *A Guide to Stewardship Planning for Natural Areas*, 2003. MNR, 35pp.++
- *Wetland Drain Restoration Project: "How to" Guide, 2003*. MNR, Norfolk Land Stewardship Council, Norfolk County, 28pp. (+ appendices)
- *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem 2002–2003 Biennial Progress Report*. Environment Canada, MNR++

Bringing the Data Together: *The Ontario Great Lakes Coastal Wetland Atlas*

The Ontario Great Lakes Coastal Wetland Atlas is a joint EC-MNR publication (March 2003), that provides information on coastal wetlands of the Great Lakes and connecting channels in Ontario. The Atlas contains summaries of coastal wetlands in each of the major lakes and connecting channels of the Great Lakes Basin. Each summary is accompanied by a detailed map and appendices. Results identified through the Atlas indicate that these coastal wetlands are primarily marsh-type wetlands that provide important habitat for numerous significant species, but that human impacts remain common, with site-specific losses continuing to occur. The Atlas is available for downloading in pdf format from the following Web site: www.mnr.gov.on.ca/MNR/pubs/pubmenu.html.

Putting a Price Tag on Nature: *The Value of Natural Capital in Settled Areas of Canada*



Placing economic value on wetlands and other natural features is a concept becoming increasingly favoured by ecologists and economists alike to better explain the significant contributions wetland functions provide to environmental and societal health. This report, commissioned by NCC and DUC, and written by one of Canada's leading environmental economists, illustrates the importance of valuing natural capital in the settled areas of Canada. The report uses economic principles to describe the goods and services provided by natural, environmental and ecosystem resources as natural capital. Conserving natural capital is essential to the sustainability of life. Not accounting for these values when making planning and policy decisions can be very costly, and ramifications can extend well into the future. Some of the sustainable benefits lost to society by the degradation and destruction of nature include:

- high quality surface and groundwater;
- the ability to reduce water and waste treatment costs;
- protecting agricultural production on lands threatened by urbanization; and
- the ability to mitigate floods.

Using specific examples and case studies across Canada, the report demonstrates how protecting natural capital in settled areas may save Canadians hundreds of millions to billions of dollars each year.

"**WETLAND PLANTS SUCH AS DUCKWEED** CAN REMOVE BETWEEN 116 AND 400 KILOGRAMS PER HECTARE PER YEAR(KG/HA/YR) OF PHOSPHORUS AND 350 TO 1 700 KG/HA/YR OF NITROGEN. OTHER WETLAND PLANTS **HAVE THE CAPACITY TO REMOVE OR DEGRADE TOXIC COMPOUNDS** SUCH AS HEAVY METALS AND PESTICIDES." Dr. Nancy Olewiler, author "The Value of Natural Capital in Settled Areas of Canada"

HOW MUCH WOULD IT COST SOCIETY TO REPLACE THESE NATURALLY OCCURRING SERVICES, ONCE A WETLAND IS LOST OR DEGRADED?

Students in nature's classroom

Adopt-a-Class: Ducks Unlimited Canada's Project Webfoot

Education is the key to conserving wetlands and wildlife for future generations. By learning about the importance of wetlands and the actions that can be taken to help conserve and protect wetlands, young people can grow up to be active conservation leaders of tomorrow. DUC's Project Webfoot is a curriculum-based wetland education program that provides lesson plans, field trips to local wetlands and on-line resources. Individuals and companies have made a difference by adopting classes to sponsor the delivery of this valuable learning experience. To date, approximately 100 schools have participated in DUC's Project Webfoot program in the Great Lakes area. For more information, please contact Project Webfoot (see Contacts).

STRATEGY 2
Improve Wetland Science, Data and Monitoring

Conduct and facilitate study of wetland functions, status and trends to improve understanding, communicate values, and set priorities for protection and rehabilitation. Develop an accessible, computerized database for coastal Great Lakes wetlands.

PROGRESS	MILESTONE
0% 25% 50% 75% 100%	2.1 Establish an ad-hoc interagency data-management group or technical coordination team.
0% 25% 50% 75% 100%	2.2 Create/maintain an integrated computer database for coastal wetlands of the lower Great Lakes and expand to include the remainder of the Great Lakes Basin (e.g., *Ontario Great Lakes Coastal Wetland Atlas*, plans for interior Ontario wetlands, binational coastal outcome from Great Lakes Coastal Wetlands Consortium). Update the catalogue of existing coastal wetland databases (metadata) if necessary.
0% 25% 50% 75% 100%	2.3 Continue wetland health monitoring at a variety of spatial and temporal scales (e.g., Durham Region Coastal Wetland Monitoring Project), including maintenance and enhancement of a binational Great Lakes wetland monitoring program (e.g., the community-based Marsh Monitoring Program, Great Lakes Coastal Wetlands Consortium indicators work).
0% 25% 50% 75% 100%	2.4 Investigate and report on targets (e.g., SOLEC, individual agency), status and trends in wetland area and other attributes (e.g., Wetland Monitoring Pilot using Landsat for Durham and York Regions, University of Waterloo project using Compact Airborne Spectrographic Imager (CASI) at St. Clair National Wildlife Area, participate in Great Lakes Coastal Wetlands Consortium to develop binational methodology for tracking trends).
0% 25% 50% 75% 100%	2.5 Investigate and report on loss of wetlands (area and function) due to agricultural drainage and other causes in a selected watershed (e.g., Pembroke study, Grand River Conservation Authority (GRCA) modelling exercise).
0% 25% 50% 75% 100%	2.6 Investigate the science of wetlands, including the relationship between wetland hydrology and groundwater discharge/recharge; features that define faunal habitat preferences; wetland function within a landscape mosaic—hydrology, connections to uplands, buffers; exotics; species at risk; species toxicology; sensitivity to climate change; relationship between wetlands and water quality; and economic values.
0% 25% 50% 75% 100%	2.7 Use up-to-date science to develop a more cost-effective methodology for evaluating wetland functions and values, while maintaining the scientific rigour of the provincial wetland evaluation system.

Why?

GLWCAP PARTNERS HAVE MADE EFFORTS TO PRIORITIZE THIS STRATEGY and have increased their involvement in facilitating and advancing the knowledge base of Great Lakes wetlands. Broader partnerships and consistency in data protocols are enabling scientists to examine Great Lakes ecology as complete ecosystems, regardless of political boundaries. These investigations improve our understanding of wetland extent and location; the wetland functions and processes critical for sustaining life, and enable us to monitor changes in the landscape around the Basin. Significant progress has been made, but there is still much work to be done.

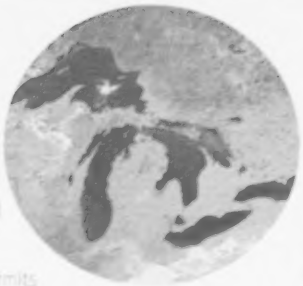
Modelling Lake Ontario-St. Lawrence River Wetland Plant and Bird Community Responses: Assessing Water-Level Regulation Scenarios

Parks Canada

The International Joint Commission (IJC) has recently completed a five-year study (2000–2005) to review the operation of structures controlling the flows and levels of the Lake Ontario-St. Lawrence River (LOSL) system. In addition to addressing the multitude of stakeholder interests, the regulation plan review also considers environmental sustainability, with a focus on the ecological integrity of wetlands. Environment Canada in partnership with U.S. and regional partners completed extensive, multidisciplinary studies to quantify the relationships between hydrology and wetland plant and bird assemblages in the LOSL system. Analyses revealed strong associations between short and long-term water-level fluctuations and estimated abundance of wetland plant communities and breeding bird pair densities. These quantitative associations were used to develop predictive computer models and environmental performance indicators for use in the assessment of alternate LOSL water-level regulation plans. These environmental performance indicators enabled the identification of alternate regulation plans that should result in reductions of environmental impacts relative to the current regulation plan due to past alterations of water-level cycles. The scientific protocols and results leading to the biological community response models used in the IJC study will be published in the journal *Environmental Monitoring and Assessment* later this year.

Please contact Environment Canada (see Contacts) for more information.

Remote Wetland Mapping



Satellite remote sensing has emerged as a major interpretive tool for the identification and monitoring of wetlands. Remote sensing methods are repeatable in time and space, ideal for seasonal or annual monitoring of wetlands in the context of their surrounding land use. Satellite monitoring permits investigations over large areas, which would otherwise be logistically difficult, not to mention timely and expensive. The following stories highlight initiatives that are cooperating nationally and locally to support wetland monitoring.

Enhanced Wetland Mapping & Evaluation for Ontario's Forested Shield

In the province of Ontario, 'significant' wetlands, identified through the Ontario Wetland Evaluation System (OWES), are afforded protection through the Provincial Policy Statement. More than 2 000 wetlands have been evaluated in the province, with the majority of evaluations conducted in southern Ontario. With increasing pressures, including peat extraction, development, climate change and water quality, identifying wetlands in northern Ontario is becoming increasingly important. The Enhanced Wetland Mapping and Evaluation Project was developed to deliver accurate wetland mapping to municipalities. DUC has led the multi-partnered initiative, involving the District Municipality of Muskoka (DMM) and the MNR.

Helicopter surveys are used to evaluate remote wetland mapping

In 2003, the DMM was the site of a pilot project to test current satellite mapping methodologies to create a map of basic wetland types in forested landscapes for the study area. Ground-based data were collected to assess the mapping product. Results indicated a 90 percent accuracy level for identifying Muskoka wetlands. This wetland mapping project identified more than 31 000 hectares of additional wetlands, increasing the areal percentage of identified wetlands within the DMM from 4.82 to 11.26 percent.

Muskoka District wetlands, as identified through the Enhanced Wetland Mapping project

The pilot proved very successful at mapping existing wetlands. It has since been expanded to map wetlands in Haliburton County and areas of the Parry Sound District. Workshops are planned to facilitate incorporation of the enhanced mapping into municipal Official Plans. Future work will focus on a more accurate classification of wetland types and may also provide us with the ability to evaluate wetland significance using remote sensing technologies.

Please contact Ducks Unlimited Canada (see Contacts) for more information.

CANADA CONTAINS 25% OF THE WORLD'S WETLANDS

Canadian Wetland Inventory

Canada is one of the world's wealthiest countries in terms of water and wetlands. To protect these resources the Canadian government is strongly committed to wetland conservation initiatives and international responsibilities, including climate change, biological diversity, the Ramsar Convention on Wetlands, Canada's Stewardship Agenda and the Canadian Biodiversity Strategy.

The Canadian Wetland Inventory (CWI) is a national project being led by EC, that will delineate and classify wetlands based on the Canadian Wetland Classification System. It will provide a baseline estimate for Canada's wetlands from which to assess and report on the status and trends of these important ecosystems.

The CWI will incorporate a multi-scale approach that will accommodate finer-scale details in wetland mapping where they already exist through regional initiatives. For the Great Lakes ecosystem, regional integration of methodology developed through the MNR's Southern Ontario Land Resource Information System (SOLRIS) and DUC's and MNR's Enhanced Wetland Mapping in Central Ontario could provide more detail, making it more useful for a variety of users in this part of the country by providing the best available data.

The CWI initiative has been a collaboration involving remote sensing and wetland experts from provincial agencies, universities and the private sector, as well as coordination with other national remote land-mapping initiatives such as the Canadian Forestry Service's Earth Observation for Sustainable Development of Forests (EOSD). Using a partnership approach ensures vested conservation interests are met and supports an integrated framework for wetland mapping and monitoring in Canada. Phase One of the CWI is nearly complete, and Phase Two is planned to begin in 2006, when it will become fully operational.

National Partners for the Canadian Wetland Inventory

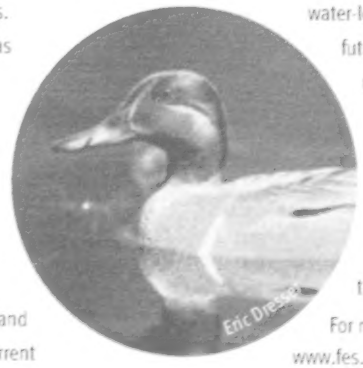
- ENVIRONMENT CANADA
- CANADIAN SPACE AGENCY
- NATURAL RESOURCES CANADA
- DUCKS UNLIMITED CANADA
- AGRICULTURE AND AGRI-FOOD CANADA
- NORTH AMERICAN WETLANDS CONSERVATION COUNCIL

The final product, a digital delineated and classified inventory, will be integrated into the National Hydrographic Network available for public access through Natural Resources Canada (NRCan) (www.nrcan-rncan.gc.ca) and GeoBase (geobase.ca).

For more information on the Canadian Wetland Inventory, please visit: www.cwi-icth.ca.

Implications of Climate Change on Marsh Bird Conservation in Lower Great Lakes Coastal Wetlands

Water-level cycles are critical drivers governing coastal wetland distribution, ecological diversity and functioning within the Great Lakes. Projections from 2050 climate change scenarios suggest as much as a one metre decline in Great Lakes water levels which may affect the diversity and distribution of current wetland plant and wildlife communities. EC in partnership with the University of Waterloo has developed wetland vegetation and bird community predictive models to estimate impacts on community structure due to declines in mean annual water levels for Lakes Ontario and Erie. Model results indicate that degree of shoreline alteration and coastal geomorphology will strongly affect the ability of current wetland communities to respond and persist under declining Great Lakes water-level scenarios. Existing wetland conservation projects and future Great Lakes coastal wetland conservation programs need to consider potential changes in the distribution and abundance of wetland habitats due to climate change. Incorporating climate change predictive model results into the priorities and targets of wetland conservation programs will help ensure that actions taken in the next ten years remain good conservation decisions into the future.



For more information contact Environment Canada or visit: www.fes.uwaterloo.ca/research/airg/wetlands/index.htm.

Data without Borders – The *Great Lakes Coastal Wetland Inventory*

The *Great Lakes Coastal Wetland Inventory* is the first spatially explicit, seamless binational summary of coastal wetland distribution in the Great Lakes Basin, and is now available on-line. EC led the completion of the Canadian dataset under the Great Lakes Coastal Wetlands Consortium (GLCWC), a binational partnership of wetland science and policy experts which aims to implement a long-term program to monitor Great Lakes coastal wetlands. The dataset supports the long-identified need for a broadly accessible binational wetlands inventory.

This database provides a baseline, or standard reference, for the Great Lakes wetland science, policy and management community. It will be the foundation for all subsequent GLCWC work, including the development of a long-term coastal wetland monitoring program. It also provides the first binational estimate of coastal wetland area – more than 216 000 hectares of coastal wetlands have been identified. Almost 50 percent of this wetland area is found in the Lake Huron and Lake Michigan sub-basins.

At the 2004 State of the Lakes Ecosystem Conference (SOLEC), the *Great Lakes Coastal Wetland Inventory* was used to report on the Coastal Wetland Area by Type indicator, one of the 13 indicators used to determine the health of Great Lakes coastal wetlands.

The *Great Lakes Coastal Wetland Inventory* is available on-line for scientists, policymakers and interested citizens to use in a Geographic Information System (GIS). The dataset can be downloaded from the Great Lakes Commission (GLC) Web site: www.glc.org/wetlands/inventory.html.

Project investigators acknowledge that this dataset is still an underestimate of the current wetland area for some regions of the Great Lakes, particularly the upper Great Lakes where existing federal, provincial or state data are limited. Other GLCWC initiatives are underway to address this limitation, including assessing the use of various remote sensing technologies. Affordable and accurate remote sensing methodologies will enable long-term monitoring of the Wetland Area by Type indicator in the future.

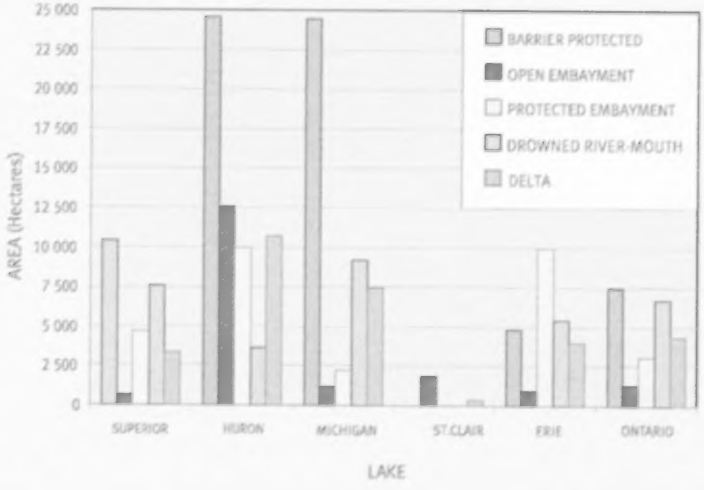
Please visit the GLC Web site for more details on the GLCWC, the *Great Lakes Coastal Wetland Inventory* and the SOLEC Indicator work in-progress: www.glc.org/wetlands.

Binational coastal wetland area identified in the *Great Lakes Coastal Wetland Inventory* within the Great Lakes and connecting rivers up to Cornwall, Ontario.

LAKE / RIVER	AREA (HA)
Lake Superior	26 626
St. Marys River	10 790
Lake Huron	61 461
Lake Michigan	44 516
St. Clair River	13 642
Lake St. Clair	2 217
Detroit River	592
Lake Erie	25 127
Niagara River	196
Lake Ontario	22 925
Upper St. Lawrence River	8 454
Total	216 546

WHY CLASSIFY COASTAL WETLANDS BY HYDROGEOMORPHOLOGY?

Existing wetland classification systems utilize biological and physical factors to categorize wetland types. However, broad wetland types (marsh, swamp, bog and fen) do not describe the diversity of relationships that coastal wetlands can have with the lakes. Great Lakes coastal wetlands of similar hydrological connection to the lake and similar local geology will have similarities in basin shape, protection from wave and wind processes, organic accumulation and plant community. These similarities provide a more typical response of the wetland to environmental influences and change. The *Great Lakes Coastal Wetland Inventory* classifies wetlands using a standardized binational hydrogeomorphic coastal wetland classification system specific to the Great Lakes to more accurately reflect the existing variety of Great Lakes coastal wetlands and provide users with a forum for comparative analyses, both between wetland types and across them. EC scientists worked with U.S. colleagues to develop the binational co-authored classification system and agree on consistent terminology. Read the classification schema on-line at: www.glc.org/wetlands/inventory.html.



STRATEGY 3
Secure Wetlands

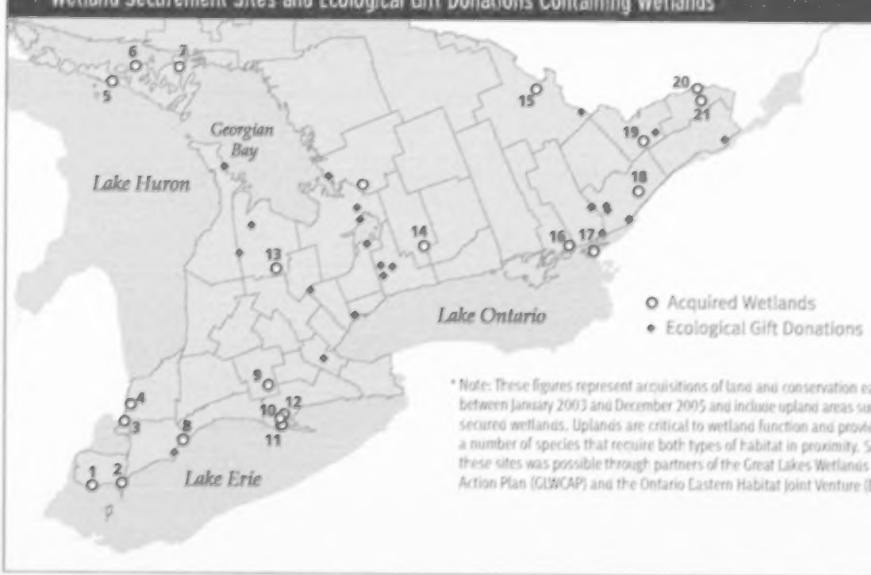
Determine priority securement sites and the most effective techniques to secure these sites. Focus existing securement programs on priority sites. Undertake wetlands securement at priority sites involving publicly-owned lands to demonstrate innovative securement strategies. Undertake extension and stewardship activities with private landowners to protect the area and function of existing Great Lakes Basin wetlands and achieve the "no loss" long-term goals.

PROGRESS	MILESTONE
0% 25% 50% 75% 100%	3.1 Secure 6 000 hectares of wetland.
0% 25% 50% 75% 100%	3.2 Promote and facilitate improved responsible wetland protection and management (Strategy 4) on Crown lands by all provincial and federal government agencies/owners (apply guidelines and policies from Strategy 5). Identify opportunities by documenting location and ownership of all provincially owned lands with wetlands to complement existing federal report.
0% 25% 50% 75% 100%	3.3 Convene an experts workshop to identify, map and describe biodiversity investment areas and develop a Basin-wide conservation blueprint for priority securement.
0% 25% 50% 75% 100%	3.4 Identify, promote and assist activities of conservation authorities and municipalities to maintain and improve, where necessary, the security and management of other publicly-owned natural lands.
0% 25% 50% 75% 100%	3.5 Promote and facilitate responsible wetland protection and management (Strategy 4) on private lands by landowners through extension and stewardship programs. For example organize workshops to promote local securement initiatives (e.g., St. Clair EHJV community advisory committee). Linked to Strategy 1.

Wetland securement and stewardship through landowner partnerships has become increasingly important to protect wetland habitats and biodiversity. There are thousands of wetlands owned, managed and cared for by individual landowners. Efforts to encourage private stewardship, through permanent legally binding arrangements (e.g., conservation easements), less formal agreements (e.g., signed conservation agreements, or handshake or verbal agreement), and extension and education will protect more wetland habitat than acquisition alone. Landowner contact programs have become a key mechanism to encourage stewardship by private landowners, often in a rural or agricultural setting.

GLWCAP partners have made considerable efforts to secure wetlands and other natural areas using a variety of methods, conveying different levels of protection or security. The adjacent table reports on the number of hectares protected through high security techniques and the cooperation of a number of agencies and organizations.

Wetland Securement Sites and Ecological Gift Donations Containing Wetlands



* Note: These figures represent acquisitions of land and conservation easements between January 2003 and December 2005 and include upland areas surrounding the secured wetlands. Uplands are critical to wetland function and provide habitat for a number of species that require both types of habitat in proximity. Securement of these sites was possible through partners of the Great Lakes Wetlands Conservation Action Plan (GLWCAP) and the Ontario Eastern Habitat Joint Venture (EHJV).

How?

A VARIETY OF METHODS CAN BE USED TO SECURE WETLANDS, including formal donations or purchases in addition to less formal arrangements (e.g., conservation agreements). Importantly, many landowners protect the natural features on their land through a personal commitment to conservation and wetland stewardship.

Wetland Securement Projects (High Security)

	WETLAND NAME	HABITAT SECURED (HA)
1	Oxley Poison Sumac Swamp	23.9
2	Hillman Marsh	45.0
3	Roberta Stewart Wetland	6.5
4	Bickford Oak Woods	308.4
5	Misery Bay	101.6
6	Gore Bay Savanna and Coastal Wetlands	154.6
7	Strawberry Island	912.0
8	Clear Creek Forest	20.2
9	Lower Big Creek (Huyge Wetland)	31.8
10	Backus Woods	34.8
11	Murray Marsh (Big Creek Marsh)	223.4
12	Marshland Farms	42.4
13	Gildale Wetland	40.6
14	Windy Ridge	49.4
15	Mud Creek Wetland	60.1
16	Parrott's Bay	6.6
17	Button Bay	27.5
18	Brockville Long Swamp Fen	26.3
19	Curtis Wetland	16.0
20	Atocas Bay (Phase Two)	70.0
21	Alfred Bog	40.5
	Wetland and associated upland area protected through Canada's Ecological Gifts Program donations	1 751
	TOTAL HABITAT SECURED (2003–2005)	**3 993**
	Previously Reported Area Secured (for Phase Two)	8 890
	OVERALL HABITAT SECURED (2000–2005) towards meeting GLWCAP Phase Two strategy milestone	**12 883**

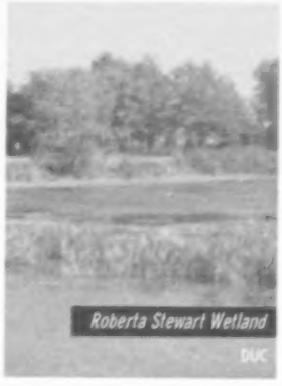
ONTARIO EHJV

The MNR, Ontario Ministry of Agriculture, Food and Rural Affairs, EC, DUC, NCC and WHC, along with a multitude of conservation partners including the U.S. Fish and Wildlife Service and private landowners, conserve and enhance Ontario's wetlands and associated habitats through delivery of the Eastern Habitat Joint Venture (EHJV) program. This program, established in 1986, implements conservation objectives of the North American Waterfowl Management Plan and the North American Bird Conservation Initiative. For additional information see page 21 of this report.

HOW ARE WE DOING?

Phase One of the GLWCAP set a milestone target to secure 6 000 hectares, which was surpassed. Phase Two set another 6 000 hectare target. GLWCAP partners, with the assistance of land organizations and proactive landowners, are currently exceeding this target by 115 percent.

The Power of Habitat Partnership: Roberta Stewart Wildlife Area and Trail



Lying east across the river from the globally significant Walpole Island marshes and to the north of the coastal wetlands along the eastern shore of Lake St. Clair, the Stewart property is strategically situated within a migration corridor that funnels waterfowl from both the Mississippi and Atlantic flyways. This site, now that restoration is complete, provides reproduction and localized staging habitats for the multitude of dabbling and diving waterfowl that traverse this area each spring and fall.

The property had been identified for acquisition and rehabilitation since the early 1980s through MNR work on the St. Clair River Remedial Action Plan. In 2003, Mr. Stewart offered the property's farmland to DUC in honour of his late wife Roberta.

Because the property abuts MacDonald Park, owned by the Municipality of Chatham-Kent, it was proposed that DUC transfer the land directly to Chatham-Kent to become a naturalized area of the park under a 30-year management agreement with DUC and by January 2004 the deal became final.

Funding for the acquisition and subsequent wetland enhancement, including diking, flooding, and naturalization was provided by Dow Chemical Inc., the Ontario Great Lakes Renewal Foundation and the Rural Lambton Stewardship Network.

A great deal of work in the area had already established a walking trail along the river. This wetland now provides another destination point. A nature trail around the wetland enhancement project and across the earthen berm allows for easy access, and the Roberta Stewart Wildlife Area has become a high-profile birding location. Interpretive signs showcase the work done by DUC and its many conservation partners to restore habitat in the St. Clair River Area of Concern.

The Great Lakes Conservation Blueprint for Biodiversity

The NCC and the Ontario Natural Heritage Information Centre (NHIC) recently completed the *Great Lakes Conservation Blueprint for Biodiversity*. It is the first major initiative to assemble, map and analyze data on the different ecosystems and special biodiversity features across the Canadian side of the Great Lakes Basin, and it is a significant step towards understanding biodiversity in Ontario.

Separated into aquatic and terrestrial projects, the *Conservation Blueprint* identifies distinct ecological systems, or areas of distinct landforms, soils, water, plants and animals, existing in the Ontario Great Lakes Basin. Information is presented as a tool for agencies and conservationists to focus their environmental efforts and make decisions in conservation planning.

The project has resulted in a repository of existing data on biodiversity and the geography of the Great Lakes, the creation of several new GIS data layers, new reporting tools on biodiversity and conservation lands, and the creation of new methods for using GIS to assist with conservation planning.

Future work on the *Conservation Blueprint* includes the validation of data inputs, incorporation of additional datasets, consideration of landscape cores and corridors, and the life history requirements of conservation targets. The NCC will be working with partners in key landscapes as they are identified in the *Blueprint*. Workshops, co-hosted by NCC and the MNR will be held for conservation practitioners and agencies interested in learning how to best use the *Blueprint* in specific conservation and biodiversity initiatives.

For more information and access to the *Conservation Blueprint* on-line, please visit www.natureconservancy.ca.

CREATING INTELLIGENT MAPS

A Geographic Information System or GIS, is a system of mapping software that integrates the collection, management and analysis of geographic data. A GIS can link features commonly seen on maps (such as roads, town boundaries, and water bodies) with related information not usually presented on maps, such as type of road surface, population, type of agriculture, type of vegetation, or water quality information. The power of a GIS is in its ability to link location to information, creating intelligent maps. This can be used to display the results of data queries as a series of maps and analyze the spatial distribution of data. Applying analytical functions creates new datasets, or model outputs, all of which can be stored in a geo-spatial relational database. As it can be customized to user needs, GIS has infiltrated all aspects of science and business, and has become a fundamental research tool.

STRATEGY 4

Create, Reclaim, Rehabilitate and Manage Wetlands

Undertake rehabilitation projects at priority sites. Pursue opportunities for wetland rehabilitation/creation through existing programs, including Remedial Action Plans and the Eastern Habitat Joint Venture. In the long-term, consider ecological and watershed-based goals to achieve an overall increase in the area and function of wetlands in the Great Lakes Basin.

PROGRESS	MILESTONE
0% 25% 50% 75% 100%	4.1 Rehabilitate/create 6 000 hectares of wetland.
0% 25% 50% 75% 100%	4.2 Strengthen and enhance wetland rehabilitation and management expertise through training and technology transfer to rehabilitation practitioners.
0% 25% 50% 75% 100%	4.3 Establish management plans on 6 000 hectares of secured or rehabilitated wetland, based on federal, provincial or non-government guidelines as appropriate. Develop and refine guidelines as needed.

Why?

ACTIVELY RESTORING WETLANDS is the only way to remedy loss of wetland area and impairment of wetland function. Returning wetland function to a healthy condition is the ultimate goal.

Wetland loss in the Great Lakes Basin is not well documented, but is estimated between 60 and 80 percent, compared to pre-European settlement. Great efforts are being directed to protect what is left of the wetlands in the Great Lakes Basin, but the fact remains that watershed influences and past mismanagement have resulted in degradation and loss of wetland habitat. Rehabilitation activities can be very complex and expensive, depending on the nature of the problems being addressed. Successful rehabilitation requires management plans that monitor wetland responses over the long-term and that are flexible to changes in local conditions.

An adaptive resource management approach is commonly used in wetland rehabilitation, and refers to the adjustment of a management strategy based on an improved understanding (usually from monitoring) or a change in environmental conditions. Adaptive resource management is integral to being a responsible caretaker of a wetland, as there are many ecological influences and functions within a wetland ecosystem that scientists do not fully understand. A number of government and non-government organizations now implement adaptive management techniques in wetlands in their care, and have been very successful in improving the functions and aesthetics of coastal wetlands in need.

Over the two-year period covered by this report, 410 wetland rehabilitation projects were underway or completed in the Great Lakes Basin, enhancing approximately 4 458 hectares of wetland habitat. These projects are summarized in the following table.

COMMITTED TO WETLAND ENHANCEMENT

ORGANIZATION	NUMBER OF WETLANDS	PROPERTY AREA (HECTARES)
Ontario Ministry of Natural Resources	6	24
Ducks Unlimited Canada*	94	812
Wildlife Habitat Canada/Wetland Habitat Fund*	285	3 504
Environment Canada (Great Lakes Sustainability Fund/EcoAction)	25	118
Total	410	4 458

Note: These figures represent current or completed projects between January 2003 and December 2005. Wetland enhancement includes rehabilitation, creation and restoration.

* Through the Ontario EHJV partnership, DUC and WHC/WHF are supported by MNR and EC and their other partners.

Wetland Definitions

CREATION: The conversion of a persistent upland vegetation community or ephemeral shallow water area into apermanent wetland where no previous wetland existed

ENHANCEMENT: Activity that addresses the stresses or limitation of one or more wetland functions or values

REHABILITATION: Revival of the functions or values of a degraded wetland

RESTORATION: Modification of the existing function and structure of a wetland's habitat so that it is similar to historical condition

Walking with Bob Wright on his 20-hectare property near Battersea, Ontario, you get a clear picture that Mr. Wright and his family understand the importance of land stewardship both for wildlife and for people. You also gain a perspective that landscapes change over time, and that there is almost always an opportunity to enhance and restore habitat that has become degraded.

Mr. Wright's property has a diversity of habitats including upland oak and maple forests on loam soils, intermixed with jutting igneous bedrock. Woven throughout are richer areas of clay loam where white pine have been planted and softwoods have colonized. Much of his property was once cattle pasture but is now fallow. The planted trees have helped to reforest the upland areas. The floodplain wetlands on his property, which filter nutrients and sediments as the surface water flows toward Dog Lake, had been degraded by siltation and cattle trampling. Once made up of a diversity of wetland habitats, they had become a closed mat of reed grass and sedges.

Mr. Wright wanted some advice on rehabilitating his wetland. He contacted the Wetland Habitat Fund (WHF) and informed them of his plan to improve roughly six hectares of his land to allow wildlife passage and to provide migratory stopover and pairing habitat for waterfowl in the spring. The WHF operates through regionally based program representatives who provide technical assistance to landowners such as Mr. Wright who are planning habitat projects. The WHF also provides financial assistance to implement improvement projects.

As a first step, Mr. Wright completed the WHF's Wetland Conservation Plan, where he laid out plans to create a wetland cell in the lowland and expand the adjacent forest by planting native trees and shrubs. The

Lowland pairing pond creation

Wetland Conservation Plan helped him define his goals and put his property into perspective with the overall ecology of the landscape. The regional WHF field representative and the local conservation authority provided technical assistance on proper planting techniques and appropriate methods for restoration. The WHF Review Committee later approved the project and granted 50 percent of the project costs.

Bob Wright and his family have been good stewards of their forest, using the land for hiking, hunting, harvesting fuel wood, small scale tapping for maple syrup, and managing the trees against pests for optimum forest health. Now, with help from the WHF, they are also good stewards of their wetland.

The WHF is a core program of the Ontario EHJV. The WHF is sponsored by WHC, MNR, EC, and the U.S. Fish and Wildlife Service. It is delivered with help from Conservation Ontario, Ontario Stewardship, the Landowner Resource Centre, and other conservation groups.

For more information on the Wetland Habitat Fund, please visit www.wetlandfund.com.

WETLAND HABITAT FUND

FONDS POUR LES HABITATS HUMIDES

ONTARIO

As of fall 2005, more than 950 private landowners have received WHF support and have signed 10-year conservation agreements with WHC to demonstrate their commitment to habitat protection. More than 80 000 hectares of private land are now under agreement through the WHF program. These landowners have enhanced more than 20 000 hectares of wetland habitat throughout southern Ontario. About half of the projects are on farm properties; the remainder involves non-farm rural landowners.

Oshawa Second Marsh: After the Drawdown

After years of implementing less intrusive restoration methods with limited effect, DUC led a more intensive project in 2002 to divert the sediment-laden input stream around Second Marsh directly into Lake Ontario. A water-control structure was built to isolate the wetland from lake influences and to manage water levels, and promote vegetation growth. The structure permits a water drawdown, exposes and encourages the natural seed bank to germinate, and mimics natural water-level fluctuations (like those historically seen on Lake Ontario).

In 2003, the marsh was partly dewatered and a full drawdown of the water level occurred in 2004. Environment Canada has been involved in Second Marsh restoration and monitoring since 1994 and undertook a study to monitor the physical and biological changes in Second Marsh following the drawdown to determine whether improvements are occurring. Historical vegetation, amphibian, breeding bird, fish and waterfowl studies provide baseline data for comparison, as do the current conditions of other regional coastal wetlands, monitored through the Durham Region Coastal Wetland Monitoring Project.

As it has only been two years since the drawdown and one year since newly vegetated areas have been available as habitat, long-term trends and conclusive comparisons cannot be reported. However, there are some very promising observations. The drawdown in 2004 resulted in extensive new growth of emergent vegetation, providing excellent cover for waterfowl and other birds. It appears the birds are responding to these changes. Compared to previous years, there were substantial increases in the numbers of many marsh-nesting species.

Species richness has increased for most marsh-nesting birds over the last five years. Most interesting is the appearance of the Pied-billed Grebe and the American Coot, neither of which had been observed at Second Marsh during the breeding season since monitoring began in 1995. Habitat-area sensitive, Virginia Rail and Sora numbers have increased dramatically, and at least one Least Bittern, a species at risk of extinction, was heard calling during the breeding bird surveys. Black Terns, a provincial species of concern, have returned to the marsh in much higher numbers, after a two-year hiatus. Habitat availability for nesting is likely the cause for the increase in Black Terns: a number of nests were observed in the marsh and terns were observed carrying food. A viable nesting year could find Black Terns back at Second Marsh next breeding season. Also notable is that marsh species generalists, such as the Red-winged Blackbird, Swamp Sparrow and Marsh Wren, have remained fairly constant throughout the wetland drawdown and subsequent re-flooding.

Emergent vegetation: One year's growth
CWS

Continued monitoring of physical and biological parameters is important to determine the health of the ecosystem, the status and trends of wildlife, and their habitat associations. This information will be used to direct management activities in the marsh. It is hoped that eventually Second Marsh will be reconnected with the lake when it establishes itself as a diverse healthy wetland able to remain stable despite the stressors of its watershed.

Other partners of the Second Marsh initiative include the City of Oshawa, Friends of Second Marsh, Central Lake Ontario Conservation Authority, Ontario Power Generation, Ontario Great Lakes Renewal Foundation, and the MNR.

For more information, please contact Environment Canada or visit secondmarsh.science.uoit.ca.

For more information on the benefits of wetland restoration for marsh birds, please see the Bird Studies Canada publication *Marsh Havens: Improving Marsh Habitats for Birds in the Great Lakes Basin*, 2005.

Pied-billed Grebe
Walter B. Fechner

Least Bittern
Walter B. Fechner

American Coot
Walter B. Fechner

STRATEGY 5

Strengthen Legislation, Policies, Agreements and Compliance

Refine and improve compliance with existing regulatory programs. Strengthen wetland conservation and protection through ongoing and upcoming regulatory/agreement/policy review opportunities.

PROGRESS	MILESTONE
0% 25% 50% 75% 100%	5.1 Influence Official Plans through stewardship and efforts to promote wetlands being designated and zoned for conservation in local planning documents. Provide information to municipalities to facilitate planning (e.g., where are wetlands, what is their local function, etc.).
0% 25% 50% 75% 100%	5.2 Periodically review the effectiveness of the provincial wetlands policy as part of the Province's five-year review process and recommend any changes and resources required to improve effectiveness of the policy.
0% 25% 50% 75% 100%	5.3 Evaluate and implement Parks and Forest Management Guidelines where appropriate for wetland management on provincially-owned lands.
0% 25% 50% 75% 100%	5.4 With appropriate agencies, review the application and effectiveness (positive and negative) of the Federal Wetlands Policy, *Fisheries Act, Canadian Environmental Assessment Act, Migratory Birds Convention Act, Agriculture Act, Species at Risk Act, Drainage Act, Lakes and Rivers Improvement Act, Conservation Authorities Act,* and *Ontario Farm Practices Protection and Promotion Act* with regard to wetlands protection and rehabilitation.
0% 25% 50% 75% 100%	5.5 Conduct workshops involving conservation authorities, the MNR, municipalities and other government and non-government stakeholders to review the effectiveness of current wetland conservation practices such as impact assessment and mitigation and provide necessary follow-up training and information exchange regarding site-specific techniques.
0% 25% 50% 75% 100%	5.6 Review and evaluate grants, loans and other financial incentives/disincentives to determine their impact on wetland resources (including facilitating protection) (e.g., Conservation Land Tax Incentive Program, Managed Forest Tax Incentive Program).
0% 25% 50% 75% 100%	5.7 Optimize implementation of GLWCAP through the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem.

How?

CANADA DOES NOT HAVE SPECIFIC WETLAND LEGISLATION, but coastal wetlands are indirectly protected by a number of federal and provincial acts. Policies, agreements and regulations are regularly used in wetland protection and are becoming increasingly effective through adoption into Municipal Official Plans. In Ontario, new developments in provincial policies and acts, including the Greenbelt Plan, will further support wetland conservation efforts.

The Conservation Land Tax Incentive Program

In December 2004, the Community Conservation Lands (CCL) category (formerly "Other Conservation Lands") of the Conservation Land Tax Incentive Program (CLTIP) was reinstated through regulation under the *Assessment Act*. This category enables conservation authorities and charitable conservation organizations to apply for municipal property tax exemption on any properties they own that meet the new designations of eligible land, as listed in the regulation. These new designations, with a broader conservation mandate than the original categories under the program, further contribute towards natural heritage conservation that advances provincial protection objectives. Eleven new categories of designated lands are now eligible for tax relief when owned by conservation authorities or conservation organizations. These changes will allow conservation organizations to put their limited funds toward additional securement and stewardship efforts rather than property taxes.

Provincial Policy Statement, 2005

On March 1, 2005, the Province of Ontario issued the new version of the Provincial Policy Statement (PPS). This document provides "policy direction on matters of provincial interest related to land use planning and development."

The *Natural Heritage* policies of the PPS, 2005, provide that:

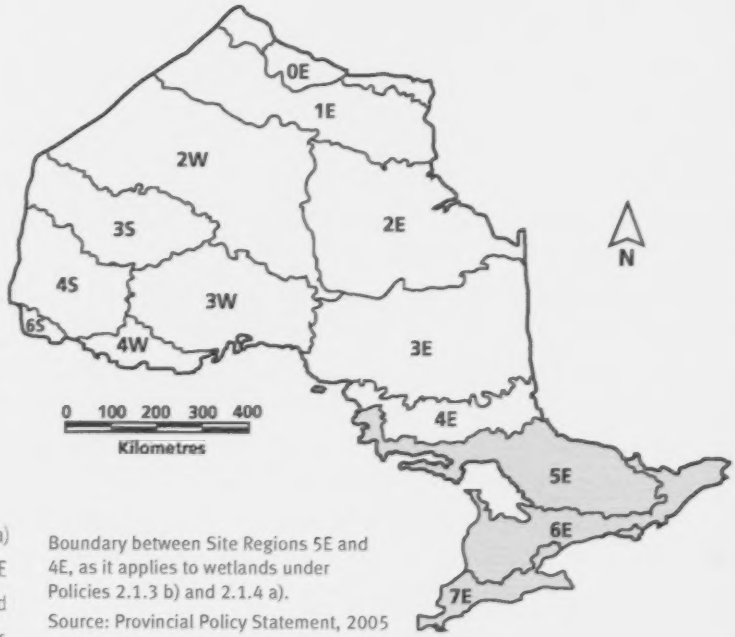
- natural features and areas shall be protected for the long term; and
- the diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing the linkages between and among natural heritage features and areas, surface water features and groundwater features.

Notable changes made to the 2005 version of the PPS include:

- expanding the wetland policy prohibiting development and site alteration (a) in significant wetlands beyond Ecoregions 7E and 6E to include Ecoregion 5E (see map), and (b) to include all significant Great Lakes coastal wetlands; and
- changing the direction given to planning authorities regarding application of policy statements under the *Planning Act* from "shall have regard to" to "shall be consistent with."

In addition, the Water policies of the PPS, 2005, have been expanded. They now provide for:

- using the watershed as the ecologically meaningful scale for planning;
- minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts;



Boundary between Site Regions 5E and 4E, as it applies to wetlands under Policies 2.1.3 b) and 2.1.4 a).
Source: Provincial Policy Statement, 2005

- identifying surface water features, groundwater features, hydrologic functions and natural heritage features and areas that are necessary for the ecological and hydrological integrity of watersheds; and
- maintaining linkages and related functions among surface water features, groundwater features, hydrologic functions and natural heritage features and areas.

The PPS, 2005, can be downloaded from the following Web site: www.mah.gov.on.ca/userfiles/page_attachments/Library/1/789108_ppsenglish.pdf.

Drainage Grants and Significant Wetlands

Recently the Ontario Ministry of Agriculture, Food and Rural Affairs reviewed their administrative policies for the Agricultural Drainage Infrastructure Program. The new policies recognize the importance of significant wetlands, stating that grants for the creation of new agricultural drains will not be provided within provincially-significant wetlands, unless an engineer's report demonstrates no negative impact to wetland features or functions.

Visit www.omafra.gov.on.ca/english/landuse/facts/adip_admin.htm for more information.

John Mitchell

Coastal Wetland Protection Measures: An Overview for the Great Lakes

CWS

A binational review of Great Lakes coastal wetland protection measures was conducted recently, including regulatory tools, tax incentives, and securement and stewardship activities applicable to the U.S. and Canada. The review documented:

- "encouraging trends" in wetland conservation efforts, including a broader range of stakeholders interested in wetland conservation (e.g., water conservation interests); and
- areas where further improvements are needed, including the need for better monitoring of landscape-scale wetland changes. This would facilitate assessment of the net benefits of wetland conservation efforts.

The review provides information that can enhance agency and public support for wetlands conservation action and empower local communities and individual landowners to take greater responsibility for conservation planning and programs in their jurisdiction.

For further information see: Loftus, K.K., R.C. Smardon and B.A. Potter, "Strategies for the stewardship and conservation of Great Lakes coastal wetlands." *Aquatic Ecosystem Health and Management* 7,2 (2004): 305–330.

Protecting What Sustains Us, Ontario's Biodiversity Strategy

Ontario has launched a strategy to conserve the province's biodiversity, as part of Canada's response to the international *Convention on Biological Diversity*. It will complement the *Canadian Biodiversity Strategy*. Through presenting a vision and goals and identifying threats and opportunities it is hoped the Strategy will conserve Ontario's "rich natural heritage of native species—including plants, animals and entire ecosystems" according to the Convention's objectives of conservation, sustainable use and fair and equitable sharing of biodiversity benefits.

The document provides a framework for actions by government and its partners, including:

- working together
- promoting stewardship efforts
- ensuring public understanding of and commitment to biodiversity conservation
- preventing negative impacts from air and water pollution, climate change, invasive species, habitat loss and other threats to biodiversity
- protecting natural spaces and natural heritage values
- improving and sharing scientific knowledge of biodiversity

Ontario's Biodiversity Strategy is available on-line at: www.mnr.gov.on.ca/MNR/biodiversity/biodiversity_eng.pdf.
The Canadian Biodiversity Strategy is available at: www.eman-rese.ca/eman/reports/publications/rt_biostrat/intro.html.

STRATEGY 6

Strengthen Local Planning and Commitment to Wetland Conservation

Ensure that all new plans such as resource-management plans, watershed-management plans, local land use plans, Official Plans and habitat management plans incorporate wetland protection and rehabilitation strategies. Also encourage recognition and designation of appropriate adjacent and upstream land uses.

PROGRESS	MILESTONE
0% 25% 50% 75% 100%	6.1 Update the MNR's natural heritage strategies and guidelines for coastal areas (Crown lands) as required.
0% 25% 50% 75% 100%	6.2 Identify, promote and assist activities of conservation authorities and municipalities to maintain current watershed plans/strategies, integrated resource-management plans, zoning and other activities for wetlands protection.

How?

IT IS THE INTEREST, EFFORTS AND COMMITMENT OF LOCAL CITIZENS THAT PROTECTS MANY WETLANDS and ensures that they remain in good condition or are rehabilitated. Local efforts are extremely important in wetland conservation. While many Ontario municipalities are enforcing stricter wetland protection and conservation measures than provincially or federally legislated measures, there are still opportunities to ensure that wetlands are considered in planning decisions. These include developing science and economics-based land use decision making tools, as well as supporting and providing guidance to local groups and municipalities.

The Greenbelt Plan

Ontario's Greenbelt Plan, approved in February 2005 (and enabled under the *Greenbelt Act*, 2005), will greatly contribute to the quality of life of present and future generations in Ontario's Golden Horseshoe. The Plan protects the natural resources in this area from urban sprawl which, when added to the protected areas of the Oak Ridges Moraine and the Niagara Escarpment, addresses more than 700 000 hectares of environmentally sensitive and agricultural lands. The Golden Horseshoe is one of the fastest growing regions in North America. By 2031, it is estimated that about 3.7 million more people will move to this area.

The Greenbelt Plan prohibits new development or site alteration in key natural heritage features, such as wetlands and significant woodlands, within the defined Natural Heritage System, and in key hydrologic features such as permanent and intermittent streams. Settlement area expansions cannot extend into the defined Natural Heritage System. The Plan also protects water resources from the impact of development, preserves shorelines and strengthens the river valley connections between the Oak Ridges Moraine and the Niagara Escarpment, and between Lake Ontario and Lake Simcoe.

The Greenbelt Plan was developed as a "balanced" plan that protects natural heritage, water and agricultural resources from urban sprawl while at the same time keeping rural communities healthy and the rural economy strong by providing for agricultural, tourism, recreational and resource uses.

For more information, visit
www.mah.gov.on.ca/userfiles/HTML/nts_1_22087_1.html.

How Much Wetland Habitat is Enough? A Decision Making Tool.

In 2004 Environment Canada produced *How Much Habitat is Enough? A Framework for Guiding Habitat Rehabilitation in Great Lakes Areas of Concern, Second Edition*, an update of the 1998 report from EC, MNR and the Ontario Ministry of the Environment (MOE). The *Framework* was intended to provide guidance for selecting where wetland, riparian and forest habitat can be restored most effectively and efficiently. It has become a useful tool at the land use and land planning decision level regarding restoration, conservation and planning. It has also become a conservation biology primer for many conservation authorities.

The guidelines have been adopted or adapted in over 25 Areas of Concern (AOC) watersheds to guide restoration plans and/or natural heritage/watershed strategies.

Adaptation is encouraged: the Essex County Biodiversity Strategy considered the 10 percent wetland cover guideline along with local history and site conditions to arrive at a 12 percent wetland cover goal.

The *Framework* has also seen extensive use outside of the AOCs and is increasingly being used as a conservation tool. There has been increased use by municipal planners, and incorporation of the guidelines in Official Plans is beginning, either directly or through natural heritage strategies.

Contact Environment Canada for more information (see Contacts) or read the *Framework* on-line at: www.on.ec.gc.ca/wildlife/publications-e.html.

Wetlands and Source Water Protection

In May 2000, drinking water contaminated with *e. coli* and *campylobacter* bacteria killed seven people and made over 2 300 ill in Walkerton, Ontario. In response to the Walkerton tragedy and Commissioner Dennis O'Connor's report of the Walkerton Inquiry that followed, the Ontario government has:

- introduced numerous new pieces of legislation and regulations. These include the *Safe Drinking Water Act*, the *Sustainable Water and Sewage Systems Act*, and the Drinking Water Systems Regulation; and
- released the recommendations of two expert advisory committees on watershed-based source water protection.

In addition, work on guidelines for implementing watershed-based source water protection is underway. One of the first steps in this planning process is to assess the physical, sociological and economic characteristics of watersheds. An understanding of these watershed attributes is needed to guide protection of drinking water sources.

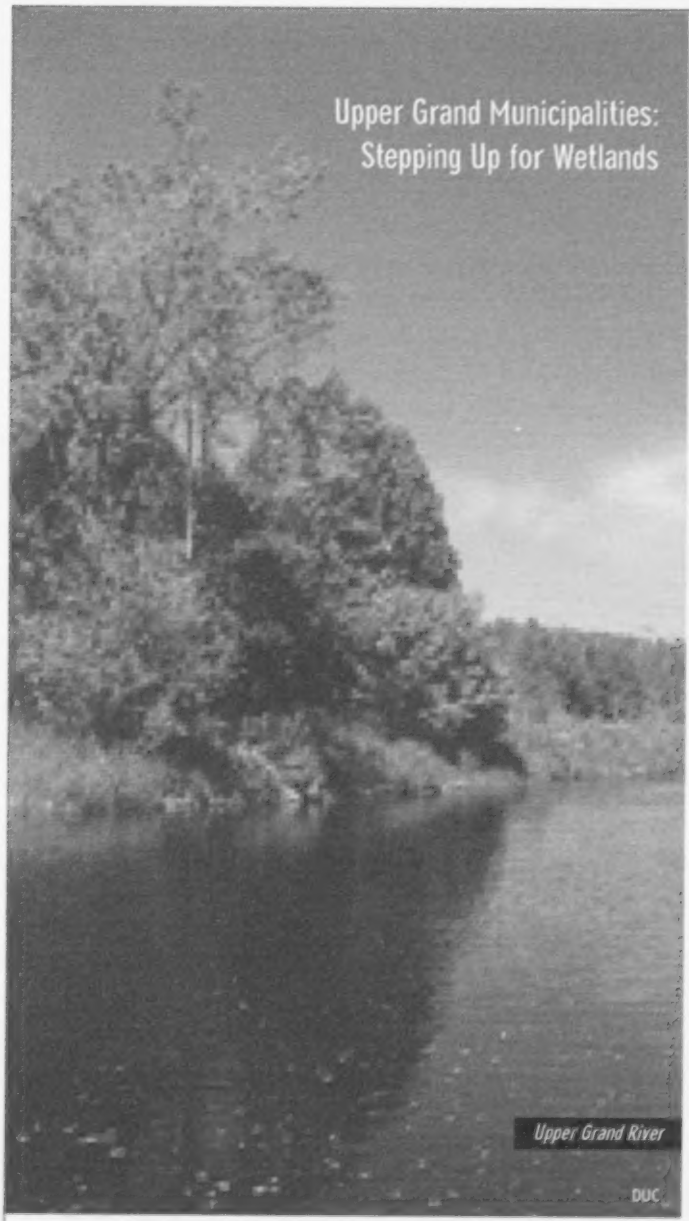
Ontario's source water protection efforts are being led by the MOE. The MNR is working with the MOE, the Ontario Ministry of Agriculture, Food and Rural Affairs and others to develop guidelines for describing watersheds. Wetlands and other naturally vegetated areas, such as woodlands and riparian areas, can help protect drinking water sources by trapping sediments and soils and altering or reducing contaminants, nutrients and some pathogens before they are introduced to surface water and groundwater sources. "Healthy" watersheds have a good mix of naturally-vegetated areas, well distributed across the landscape.

Temperate Wetland Restoration Training Course: Working with Municipal Drainage Superintendents

The Temperate Wetland Restoration Training Course has been held every year since 1996 to introduce principles, concepts and ideas on how to successfully restore wetlands. More than 250 resource professionals from several agencies in southern Ontario have taken the course.

In recent years, 15 drainage superintendents from southwestern Ontario have attended the course and many are now working with local biologists to restore portions of wetlands.

Upper Grand Municipalities: Stepping Up for Wetlands



Upper Grand River

DUC

Healthy Wetlands for the Upper Grand was a three-year project (2002–2005) designed to provide information and technical services for wetland management in the Grand River watershed by raising awareness of wetland values within local communities. Local municipalities and landowners have shown great support for the project. Municipalities have assisted project staff to notify landowners of local workshops and distribute resource materials. Municipalities also participated in a workshop directed to councillors, designed to provide credible information on wetland functions and address specific issues and impacts related to drain construction and maintenance practices. Clearing and drainage of lands for agricultural purposes and for peat extraction are the main causes for wetland loss in the Upper Grand watershed.

Coincidentally, four local municipalities in Dufferin County were involved in Official Plan reviews and updates during the project, which opened up opportunities for collaboration. The project staff were able to reciprocate municipalities by providing wetland resource information and comments on draft Official Plans.

As of November 2005, two municipalities, Amaranth and East Garafraxa, had completed and adopted new Official Plans and zoning bylaws that will significantly increase the number of wetlands afforded protection. New policies include protection from certain types of development for unevaluated wetlands. In other Upper Grand municipalities, Official Plan reviews are ongoing, but encouraging, as draft plans also include progressive policies for natural heritage protection. In each case, local municipalities have opted to exceed the minimum provincial requirement for protection of "significant" wetlands, as required in the Provincial Policy Statement. In Melancthon Township, the council also implemented a site alteration bylaw to prohibit or regulate the removal of topsoil and the alteration of the grade of the land, largely to reduce the impacts of peat extraction on wetlands and other natural features. These are excellent examples of the growing number of municipalities taking charge of local protection of source water, recognizing the importance of clean water to their communities.

Healthy Wetlands for the Upper Grand was a collaborative project implemented by DUC, the Land Stewardship Network serving Dufferin and South Simcoe, and the Grand River Conservation Authority.

Great Lakes Sustainability Fund: Support for Wetlands

The Great Lakes Sustainability Fund (GLSF) provides financial support to initiatives that are essential to the rehabilitation of key habitats in Canadian Areas of Concern. The GLSF has supported the development of many conservation authority and municipal watershed and natural heritage strategies. It has also supported many community-based restoration projects in both coastal and inland wetlands throughout the Basin. For example, with GLSF support, the Halton Region Conservation Authority is coordinating with other conservation authorities and municipalities in the Hamilton Harbour AOC to implement watershed plans and shoreline stewardship initiatives. By incorporating this work into local planning decisions and Official Plans, this project should result in greater protection of important natural features in the watersheds and along the shoreline, including wetlands.

For more information on GLSF, contact Environment Canada or visit on-line at: sustainabilityfund.gc.ca.

STRATEGY 7
Improve Coordination

Coordinate and integrate all Action Plan protection, rehabilitation and creation initiatives with other ongoing programs that affect Great Lakes wetlands, in particular activities associated with relevant international conventions and agreements.

PROGRESS	MILESTONE
0% 25% 50% 75% 100%	**7.1** Through linkages to Strategy 1, maintain a current GLWCAP Web site with regular updates to share progress with wetlands stakeholders.
0% 25% 50% 75% 100%	**7.2** Build alliances with new and existing wetlands and other wildlife habitat conservation initiatives to ensure coordination and efficiency as well as facilitate reporting on the full range of wetland activities in the Great Lakes Basin.
0% 25% 50% 75% 100%	**7.3** Coordinate binational Great Lakes wetlands activities (including Lakewide Management Plans, International Joint Commission Lake Ontario-St. Lawrence River Study, etc.).
0% 25% 50% 75% 100%	**7.4** Coordinate binational Great Lakes wetlands meetings to complement initiatives such as the North American Bird Conservation Initiative, Great Lakes Conservation Blueprint and SOLEC.

Bird Conservation Activities of the Eastern Habitat Joint Venture in Ontario: A New Five-Year Implementation Plan

The Eastern Habitat Joint Venture (EHJV) was formalized in 1989 and is one of 14 "Joint Ventures" established to coordinate the delivery of programs to meet the objectives of the North American Waterfowl Management Plan. The EHJV encompasses Ontario, Quebec and the Atlantic provinces. The Ontario EHJV is a partnership of the federal government, the provincial government, DUC, NCC and WHC. The EHJV establishes direction with respect to waterfowl and habitat conservation goals for delivery of partner programs that have been achieved primarily through partner-driven funding proposals under the *North American Wetlands Conservation Act*, enabling access to U.S. and Canadian matching funds to conserve wetlands and associated habitat in the province.

In the late 1990s, the North American Bird Conservation Initiative initiated planning for other bird initiatives (shorebirds, waterbirds and landbirds) on a continental scale with the goal of engaging existing Joint Ventures as coordination, planning and implementation vehicles. The Ontario EHJV has expanded to incorporate these aspects, and is currently developing a new five-year Implementation Plan which will guide partner conservation activities related to wetland and associated habitat in the province and be a component of the overall EHJV Implementation Plan. The new five-year plan (2006–2010) will also integrate agency priorities and commitments; include objectives for wetland habitat conservation, waterfowl populations, communication and education; identify priorities for wetland and waterfowl monitoring, research and evaluation in Ontario; and identify benefits to all bird species and habitats through program implementation. The new five-year plan will also provide an avenue to allow the Ontario EHJV to continue to use its well-developed partnerships and synergy to coordinate programs that meet various bird conservation objectives.

If you would like to learn more about the Ontario EHJV, please visit www.on.ec.gc.ca/wildlife/ehjv.

Why?

WETLAND CONSERVATION IS AN ECOLOGICALLY, GEOGRAPHICALLY AND POLITICALLY COMPLEX ISSUE.

Encouraging partnership participation and maintaining open communication with all interest groups is essential. This is the purpose of the Action Plan. GLWCAP partners have participated and contributed to many information-sharing products and forums over and above those highlighted in this report, including consultative planning exercises, workshops, conferences and meetings.

Great Lakes coastal ecology includes extensive island shorelines

Kate Jermyn

Great Lakes Islands Biodiversity Project

The Great Lakes islands form the world's largest collection of freshwater islands. Wetlands are often found on and around island shoals, where they can be protected from wave action by the embayments of archipelagos. These areas contain a high proportion of significant biodiversity, including endemic species, rare habitats and critical biological functions. Strongly influenced by coastal processes, Ontario's Great Lakes islands include more than 13 000 kilometres of shoreline and harbour many species and communities of provincial and global conservation concern.

Current understanding of Great Lakes island biogeography has been generally limited. A comprehensive analysis of biodiversity, threats and existing protection for Great Lakes islands is a strategic step towards ensuring long-term conservation of these important areas and better coordination of efforts to do so. To complete this, the Natural Heritage Information Center (NHIC) has partnered with NCC with support from the MNR to develop an island classification system and conduct a biodiversity assessment for islands or island groups in the Ontario portion of the Great Lakes.

Ontario's contribution to Great Lakes island biodiversity will also better inform the biodiversity significance of U.S. islands in a Great Lakes Basin context. This project extends Ontario's participation in the binational Collaborative for the Conservation of Great Lakes Islands. This Collaborative was formed in 2003 through funding from the United States Environmental Protection Agency's Great Lakes National Program Office, and is comprised of government and non-government organizations in Canada and the U.S. The Collaborative was initiated to assemble information on Great Lakes islands and identify conservation needs. The Ontario project is intended to contribute directly to the creation of a coordinated, robust, enduring binational framework to ensure long-term island conservation in the Great Lakes Basin.

For more information, please contact the Nature Conservancy of Canada (see Contacts).

CWS

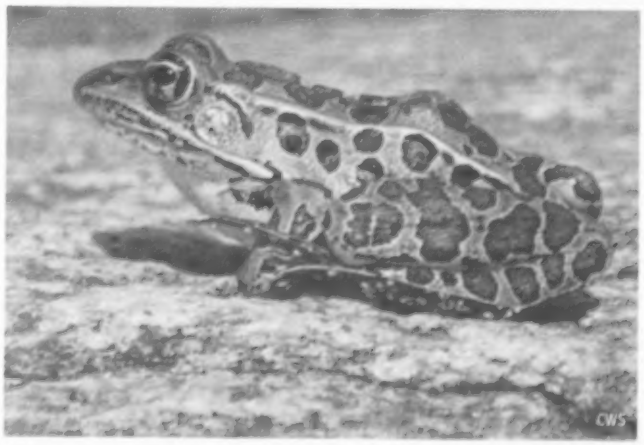
State of the Lakes Ecosystem Conference: Assessing the Health of Coastal Wetlands in the Great Lakes

The State of the Lakes Ecosystem Conference (SOLEC), a binational conference established to provide coordinated and consistent reporting on the health of the Great Lakes Basin ecosystem, last provided an update and current assessment of the state of Great Lakes ecosystem components in 2004. The assessment was based on a suite of indicators. Coastal wetland indicators are one of the key assessment tools, along with nearshore aquatic and nearshore terrestrial habitat indicators, in the Great Lakes Coastal Zone Bundle. In 2004, data were presented by the Great Lakes Coastal Wetlands Consortium (GLCWC) on 8 of 13 coastal wetland indicators of ecosystem health. On behalf of the GLCWC, Environment Canada contributed a lead role in coordination and collaboration on refinement of binational protocols and analyses in Canadian data collection efforts.

Biological condition is measured by indices of biotic integrity (IBIs), a series of locally developed response metrics. IBIs provide comparability across the Basin and, when implemented over a long time, can establish long-term trends. An assessment of the eight indicators reported in 2004 concluded that the status of coastal wetlands in the Great Lakes is "mixed" and "deteriorating". "Mixed" suggests the ecosystem displays both good and degraded features, and "deteriorating" indicates the ecosystem components are changing away from acceptable conditions. The status is the result of continued anthropogenic pressures, including hardening shorelines, hydrological alterations, watershed contamination and the introduction of exotic species.

Long-term monitoring of coastal wetlands is imperative to better understand and appreciate their role in maintaining clean water and healthy ecosystems, and helps promote the need to maintain wetland integrity. The GLCWC is committed to implement a coordinated, long-term program to monitor coastal wetlands using wetland indicators. The framework developed through SOLEC will enable consistency and comparability across the ecosystem, regardless of political borders.

For more information, visit: www.epa.gov/greatlakes/solec/index.html or www.binational.net.



AT SOLEC 2004, EIGHT INDICATORS OF ECOSYSTEM HEALTH WERE USED TO ASSESS THE CURRENT STATE OF COASTAL WETLANDS IN THE GREAT LAKES.

COASTAL WETLAND INDICATORS (as reported at SOLEC 2004)	STATUS (Condition, Trend)
Invertebrate Community Health	Mixed, Undetermined
Amphibian Diversity and Abundance	Mixed, Deteriorating
Fish Community Health	Mixed, Undetermined
Bird Community Diversity and Abundance	Mixed, Deteriorating
Contaminant Accumulation	Mixed, Unchanging
Coastal Wetland Area by Type	Mixed, Deteriorating
Effect of Water Level Fluctuations	Mixed, Undetermined
Plant Community Health	Mixed, Deteriorating

Overall Coastal Wetlands Assessment:
Ecosystem Condition: Mixed Ecosystem Trend: Deteriorating

STRATEGY 8
Evaluate the Program

Evaluate the Action Plan components, including a careful assessment of individual techniques and their application.

PROGRESS	MILESTONE
0% 25% 50% 75% 100%	**8.1** Share partners' annual workplans within implementation team.
0% 25% 50% 75% 100%	**8.2** Report on program progress at least twice during the lifespan of the Action Plan. First report was in January 2003.
0% 25% 50% 75% 100%	**8.3** Regular review of program by all implementation team partners.

The implementation team is very pleased with the progress to date of the GLWCAP, Phase Two. Phase Two has established ambitious targets and milestones under each Action Plan strategy. The evaluation presented in this report indicates the significant achievements that have occurred. Many targets have been met or have seen substantial gains. For example, the recent progress in wetland securement and rehabilitation efforts of government and non-government organizations has been outstanding. Between 2000 and 2005, GLWCAP partners have more than doubled their securement target of 6 000 hectares, based strictly on wetlands secured through acquisition. This is a great accomplishment considering budget constraints and the opportunistic nature of wetland securement. There has also been an increasing trend in other (medium to low security) wetland securement options in recent years, as new tools become available and landowners become aware of their options.

Recent years have also seen considerable gains through improved legislative and policy protection measures as natural heritage features, including wetlands, are better recognized. Policy is beginning to link water features with natural heritage features for improved ecological protection. Ontario's new Provincial Policy Statement (2005) prohibits development of or site alterations in any significant coastal wetland in the province. Priorities, opinions and policies in recent years appear to be shifting significantly in support of wetland conservation and GLWCAP will continue to support this focus.

The evaluation process also highlights the fact that progress has not been equal across all strategies. Some wetland issues are beyond the control of implementation team agencies, resulting in slower progress. Efforts to focus future activities on priority strategies are hoped to improve the realization of milestones with slower-moving progress. GLWCAP partners will continue to address all issues, regardless of their complexity, to further wetland conservation interests.

Why?

SIGNIFICANT ACHIEVEMENTS HAVE BEEN MADE UNDER GLWCAP – making it a partnership success story. The Action Plan remains a continued commitment by all partner agencies and organizations, to meet and exceed milestone goals.

The Future: Maintaining Momentum

Wetland science and conservation are being actively promoted through increased coordination efforts by GLWCAP partners. Fostering partnerships and participation by the public and interest groups is key to the success of the Action Plan and remains a high priority. By sharing the workload, GLWCAP partners are able to focus their respective strengths, interests and resources to deliver a shared vision of wetland conservation. This is a way of doing business that is achieving the desired result—a coordinated delivery of wetlands conservation efforts in the Great Lakes Basin.

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